

**REMARKS****Status of the Claims**

Claims 1-7, 9, 11, 13 and 15 have been rejected. Claims 1-7, 11, 13 and 15 have been amended with no new matter added. Claim 16 has been cancelled without prejudice or disclaimer of the subject matter therein. Claim 17 has been added. Support for claim 17 can be found, for example, in the Specification at page 7, line 6 and page 8, line 17. Claims 1-7, 9, 11, 13, 15 and 17 are pending in this application. Claims 1-7, 11, 13 and 15 have been objected to by the Examiner. Applicants have amended the claims to correct the informalities noted by the Examiner.

**Status of the Specification**

The title has been objected to for informal matters and has been amended to correct the informalities noted by the Examiner.

**Claim Rejections-35 U.S.C. §112**

Claims 4 and 15 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 1 has been amended to recite the limitation “non-magnetic grain boundaries” in line 9. Therefore, Applicants request that this rejection be withdrawn.

**Claim Rejections-35 U.S.C. §103**

Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,403,240 to Kanbe et al. (“Kanbe”) in view of U.S. Patent No. 6,069,820 to Inomata et al.

(“Inomata”) and U.S. Patent No. 6,482,329 to Takahashi et al. (“Takahashi”). The Examiner states that Kanbe discloses all of the steps of the claimed invention except for (1) laminating a magnetic layer comprising a plurality of ferromagnetic grains and (2) laminating the magnetic layer in an atmosphere having a partial pressure of water of  $2 \times 10^{-10}$  Torr or below. The Examiner goes on to state that Inomata teaches a process of making a magnetic device including a granular ferromagnetic layer comprising a plurality of ferromagnetic grains and that Takahashi teaches a process of sputtering to form a non-magnetic layer and ferromagnetic layer in a vacuum. The Applicants respectfully traverse the above rejection by stating that Kanabe, Inomata, and Takahashi, alone or in combination, do not teach or suggest all of the features of the claimed invention in claims 1, 3, 5, and 6.

Takahashi does not teach laminating in an atmosphere having a *partial pressure of water* of  $2 \times 10^{-10}$  Torr or below, but instead laminating at a “certain pressure higher than the level of  $10^{-9}$  Torr.” Takahashi, column 1, lines 67 and claim 1. In particular, Takahashi discloses a method for manufacturing magneto-resistance elements comprising depressurizing the chamber to a degree of vacuum of  $10^{-9}$  Torr or less and then increasing the pressure so that the plasma etching and sputtering steps occur in a degree of vacuum *higher* than  $10^{-9}$  Torr. Furthermore, Takahashi discloses the plasma etching and sputtering steps preferably take place in a vacuum greater than or equal to  $3 \times 10^{-7}$  Torr and less than or equal to  $8 \times 10^{-5}$  Torr. See, Takahashi column 2, lines 48-61 and claim 2. Takahashi is silent regarding the *partial pressure of water* during the sputtering process. In fact, Takahashi fails to disclose a desired partial pressure of water in *any* step of the Takahashi method for manufacturing a magneto-resistance element.

Furthermore, even if the degree of vacuum disclosed by Takahashi was assumed to be the partial pressure of water, a person of ordinary skill in the art would have no motivation to sputter at a pressure lower than that taught by Takahashi for increasing the vacuum of a process increases the manufacturing cost of the product. Lowering the operating pressure of a system increases the pumpdown time to reach the required base pressure and may necessitate the use of more expensive equipment. In view of the arguments above, Kanbe, Inomata, and Takahashi, taken alone or in combination, do not teach or suggest all of the claimed elements of the present invention.

Claims 1, 3-4 and 6 are also rejected as being obvious over U.S. Patent No. 6,383,404 to Sakai et al. ("Sakai") in view of Takahashi. The Examiner states that Sakai discloses all the elements of the claimed invention except laminating in a vacuum. For the reasons given above, Takahashi does not teach or suggest sputtering in an atmosphere having a partial pressure of water of  $2 \times 10^{-10}$  Torr or below. Further, Sakai is silent regarding the sputtering atmosphere having a partial pressure of water, as stated by the Examiner. Consequently, Sakai and Takahashi, taken alone or in combination, do not teach or suggest the claimed invention.

Claims 2, 9 and 13 are also rejected as being obvious over Sakai in view of Takahashi, as applied above, further in view of Japanese Patent Application No. 63317922 ("JP '922"). The Examiner admits the teachings of Sakai and Takahashi do not teach the hexagonal closed-packed crystal structure of the non-magnetic intermediate layer as recited in the present invention. The Examiner relies on JP '922 for the teaching of process of making a magnetic recording medium including the non-magnetic intermediate layer made of Cr and/or Mo having a hexagonal close-packed crystal structure. However, as discussed above, Takahashi fails to teach the sputtering in an atmosphere having a partial pressure of water of  $2 \times 10^{-10}$  Torr or below and hence Sakai,

Takahashi, and JP '922, taken alone or in combination, do not teach nor suggest the claimed invention.

Claims 7, 11 and 15 are rejected as obvious over Sakai in view of Takahashi, as applied above, further in view of Japanese Patent Application No. 07057237 ('JP '237"). The Examiner admits that the combined teaching of Sakai and Takahashi do not teach laminating processes without heating. The Examiner relies on JP '237 for the teaching of making a magnetic recording medium including laminating process of non-magnetic layer and magnetic layer without heating the substrate. Once again, for the reasons discussed above, Takahashi fails to teach or suggest sputtering to form a non-magnetic layer and a ferromagnetic layer in an atmosphere having a partial pressure of water of  $2 \times 10^{-10}$  Torr or below. Furthermore, Sakai disclose method for making magnetic recording mediums that includes heating the substrate to a temperature greater than 350°C. See, Sakai column 18, line 15. Consequently, Sakai teaches away from the present invention and cannot be forcibly combined with Takahashi and JP '237. For the reasons given above, Sakai, Takahashi and JP '237, alone or in combination, to not teach or suggest the present invention.

In view of the above arguments, the Applicants respectfully request that the rejections to the claims be withdrawn.

**Conclusions**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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